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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/728,541	11/29/2000	Karl M. Bizjak	51992-010	4942

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EXAMINER

PENDLETON, BRIAN T

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/728,541

Applicant(s)

BIZJAK ET AL.

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 10, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Williamson et al, US Patent 5,027,410. Williamson et al disclose a signal processing system comprising digital signal processor 50 which accomplishes a companding function. The companding is done with a time varying spectral shaping filter (step 66 done by the DSP 50). Volume control is done by element 39. The compander in the DSP 50 is response to a gain function which is tailored to the individual (column 8 lines 21-25). The companding function is shown in figure 6. The position of the knees of the function can be set by the user with respect to his/her noise suppression tolerance (column 13 lines 1-8) which reads on “at least one user-set parameter for establishing user-determined system settings” whereby the transform engine is response to the user-set parameter of noise suppression. Claims 1, 2, are met. As to claim 3, the kneepoint can be adjusted. Regarding claims 4 and 5, there is disclosed a plurality of frequency bands of which companding takes place (column 8 lines 15-25). Regarding claims 7-8, there is disclosed preprocessor 32 and 33. As to claim 9, there is disclosed A/D converter 47. As to claim 10, the apparatus comprises power amplifier 39 and speaker 40. Per claim 11, there is

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disclosed a signal channel output. As to claims 16 and 17, there is user interface 27 which inherently has an annunciator response to user inputs for controlling the compander.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al in view of Yumoto et al, US Patent 6,195,438. Williamson et al do not disclose a central power estimator mixer responsive to the plurality of companders. Yumoto et al disclose a method comprising pre-processor circuitry 22 (figure 3) which is a power estimator mixer. The estimation of the power of the incoming signals is used for volume control in volume control unit 28. The benefit of the power estimator mixer was to maintain a constant volume output level for the audio signals. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Williamson et al to have a power estimator mixer, such as that taught by Yumoto, at the outputs of the companders for the keeping the output level of the hearing aid consistent which would avoid high volume levels damaging the ears of the user.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al in view of Nakano et al, US Patent 5,404,315. Williamson does not disclose a histogram and statistics engine for monitoring at least one compander operating parameter. Nakano et al disclose an automatic gain control apparatus comprising a statistics engine which generates a

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histogram for the purpose of gain control (column 7 line 40 – column 8 line 2). It would have been obvious to one of ordinary skill in the art at the time of invention to use a statistics engine, as taught by Nakano, in the invention of Williamson for the purpose of improving the performance of the companding through digital signal processing. The use of histograms made it possible to invoke gain control at the processors own sampling rate. As to claims 13-15, the benefits of statistical engines were established and therefore it would have been obvious to utilize them for any of the components of the hearing aid of Williamson, including the claimed components.

Claims 18-24 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al in view of Fischer, US Patent 6,751,325. Williamson et al do not disclose a noise extractor for generating a compensation input to the transform engine. Fischer discloses a hearing aid comprising microphones 12, 12'; side signal reduction unit 20 and back signal reduction unit 22 each having a compensation unit. The outputs of the reduction units being mixed in mixer unit 24 for output to amplifier 28 and speaker 30. The reduction units are used for noise suppression thereby enhancing the speech heard by the user. Thus, Fischer discloses a noise extractor whereby the reference signal is the signals picked up by the microphone unit 10. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Williamson, per the teachings of Fischer, having a noise extractor unit for the purpose of increasing the intelligibility of the input sound signals.. Claims 18-20 are met. As to claims 21-24, 26-29, the combination of Williamson and Fischer teach the limitations, as modified.

Claims 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al in view of Fischer, as applied to claims 23 and 28, and further in view of

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Nakano et al. The combination of Williamson and Fischer does not disclose a histogram and statistics engine for modifying system operating parameters. Nakano et al disclose an automatic gain control apparatus comprising a statistics engine which generates a histogram for the purpose of gain control (column 7 line 40 – column 8 line 2). It would have been obvious to one of ordinary skill in the art at the time of invention to use a statistics engine, as taught by Nakano, in the combination of Williamson and Fischer for the purpose of improving the performance of the companding through digital signal processing. The use of histograms made it possible to invoke gain control at the processors own sampling rate.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Goldstein, US Patent Application Publication 2002/0057808.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (571) 272-7527.

The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian T. Pendleton  
Primary Examiner  
Art Unit 2644



btp